The Dirichlet Problem for Elliptic Systems In The Upper-Half Space

Abstract: Take an arbitrary second-order, homogenous, elliptic system, with constant complex coefficients (e.g., the Laplacian or the Lamé system of elasticity). Consider the associated Dirichlet problem in the upper-half space with (possibly non-smooth) boundary data in some class of functions (e.g., Lebesgue spaces, the space of bounded mean oscillation functions or the space of vanishing mean oscillation functions.) We identify the class of solutions for which the corresponding problems are well-posed. We also establish Fatou type theorems guaranteeing the existence of the pointwise nontangential boundary trace for null-solutions of such systems. Joint work with D. Mitrea, I. Mitrea, and M. Mitrea.